

In the claims:

The following is a full listing of claims as originally filed or most recently amended, including a currently presented amendment to claim 4.

1. (Currently Amended) A method of operating a charged particle beam tool, said method including steps of

dithering a shadow pattern relative to and within a charged particle beam, and

detecting incidence of said shadow pattern on a sparse array of targets or fiducial marks.

2. (Original) A method as recite in claim 1 wherein said dithering step includes steps of

imposing said shadow pattern on said charged particle beam,

deflecting said charged particle beam in a dither pattern, and

passing said charged particle beam through a shaping aperture.

3. (Previously amended) A method as recited in claim 1, including the further steps of

passing said charged particle beam through a first shaping aperture,

deflecting said charged particle beam, and

intercepting a portion of said charged particle beam with a second shaping aperture while shaping a remainder of said charged particle beam passed through said second shaping aperture.

(B) 4. (Currently Amended) A method as recited in claim 2, including further steps of
deflecting said charged particle beam, and
intercepting a portion of said charged particle beam with a second shaping aperture while shaping a remainder of said charged particle beam passed through said second ~~shaping~~ shaping aperture.

5. (Original) A method as recited in claim 1, wherein said detecting step includes steps of
projecting a portion of said charged particle beam on a target including fiducial marks of scintillating material, and
detecting reduction in light output when said dithered shadow pattern is incident on one or more of said fiducial marks.

6. (Original) A method as recited in claim 1, wherein said dithering step is performed by moving said shadow pattern in a repeated pattern having a repetition time.

7. (Original) A method as recited in claim 6, wherein said repetition time is similar to a spot exposure time.

8. (Original) A method as recited in claim 6, wherein said repeated pattern is a raster.

9. (Original) A method as recited in claim 6, wherein said repeated pattern is an angled shape.

10. (Original) A method as recited in claim 9, wherein said angled shape is retraced with an offset.

11. (Original) A method as recited in claim 5, wherein said dithering step is performed by moving said shadow pattern in a repeated pattern having a repetition time.

12. (Original) A method as recited in claim 11, wherein said repetition time is similar to a spot exposure time.

13. (Original) A method as recited in claim 11, wherein said repeated pattern is a raster.

14. (Original) A method as recited in claim 11, wherein said repeated pattern is an angled shape.

15. (Original) A method as recited in claim 14, wherein said angled shape is retraced with an offset.

16. (Currently Amended) A charged particle beam lithography tool including
a source of a beam of charged particles
means for causing a shadow pattern within said charged particle beam,
means for dithering said shadow pattern,
means for shaping said charged particle beam,
means for deflecting said charged particle beam to a desired location on a target including fiducial marks or sparse array of targets,
means for detecting when said dithered shadow pattern is incident on said fiducial marks, and
means for generating a correction for said means for deflecting in response to said means for detecting.

17. (Original) A charged particle beam lithography tool as recited in claim 16, wherein said fiducial marks comprise scintillating material.

18. (Original) A charged particle beam lithography tool as recited in claim 17, wherein a pattern of said fiducial marks correspond to said shadow pattern referred to a target.

19. (Original) A charged particle beam lithography tool as recited in claim 16, wherein said beam including said shadow pattern is dithered prior to passing through said means for shaping.

20. (Original) A method of operating a charged particle beam lithography tool including steps of
causing a moving shadow pattern within a shaped or patterned charged particle beam,
deflecting said shaped or patterned charged particle beam to a desired location on a target, and
correcting said deflecting step based on a time of incidence of said moving shadow pattern on fiducial marks on said target.